

WHAT IS CLAIMED IS:

1. A plasma reactor, comprising:

a ceramic body including a plurality of channels running through the ceramic body, a first set of channels facilitating passage of gas through the ceramic body, and a second set of channels including an electrically conducting material;

wherein a plasma is at least one of ignitable and sustainable in the interior of at least some channels of the second set of channels by applying an electric voltage to the at least some channels of the second set of channels.

2. The plasma reactor according to claim 1, wherein at least one of:

a) the channels of the first set of channels extend parallel to one another and traverse the ceramic body; and

b) the channels of the second set of channels extend parallel to one another and traverse the ceramic body.

3. The plasma reactor according to claim 2, wherein at least one of:

a) the channels of the second set of channels have a regular structure; and

b) the channels of the first set of channels have a regular structure.

4. The plasma reactor according to claim 3, wherein the regular structure is one of a honeycomb structure and a checkerboard structure.

5. The plasma reactor according to claim 1, wherein the channels having the electrically conducting material form electrodes, and wherein two channels having the electrically conducting material are assigned to each channel of the first

set of channels.

6. The plasma reactor according to claim 1, wherein one of:
the channels of the second set of channels are filled with the electrically conducting material;
the channels of the second set of channels are coated on their inside with the electrically conducting material; and
wires formed of the electrically conducting material are introduced into the channels of the second set of channels.

7. The plasma reactor according to claim 6, wherein the electrically conducting material is one of a metal or conducting ceramic.

8. The plasma reactor according to claim 6, wherein the channels of the second set of channels are coated on their inside by metallization at the surface.

9. A method for manufacturing a plasma reactor, comprising:
producing a green ceramic body having a first and second set of channels running through the green ceramic body;
sintering the green ceramic body to form a ceramic body;
and
after sintering, introducing an electrically conducting material into the second set of channels in the ceramic body;
whereby, when a gas passed through the first set of channels in the ceramic body and an electric voltage is applied to at least some of the channels of the second set of channels, a plasma is generated in the interior of at least some of the channels of the first set of channels.

10. The method according to claim 9, wherein the green ceramic body is produced using extrusion.

11. The method according to claim 9, wherein the electrically conducting material is introduced into the second set of channels by one of sucking through, sucking in, forcing in and blowing in one of a paste and a slip which is convertible into an electrically conducting ceramic, and subsequently firing the one of the paste and the slip to form the electrically conducting material.

12. The method according to claim 11, wherein the paste contains a metal.

13. The method according to claim 11, wherein the channels of the second set of channels are at least partially coated on their insides with one of the paste and the slip.

14. The method according to claim 13, wherein the channels of the second set of channels are filled with one of the paste and the slip.

15. The method according to claim 9, wherein introducing the electrically conducting material into the second set of channels includes temporarily sealing the first set of channels on at least one end and immersing the ceramic body in one of a solution and a suspension including a component that one of contains and is convertible into the electrically conducting material.

16. The method according to claim 15, further comprising:
converting the component into the electrically conducting material by firing.

17. The method according to claim 15, wherein the channels of the second set of channels are at least partially coated on their inside with the electrically conducting material.

18. The method according to claim 15, wherein the temporary sealing is performed using a wax which is removed after introducing the electrically conducting material into the second set of channels.

19. The method according to claim 15, wherein the wax is removed by one of burning and melting.

20. The method according to claim 9, wherein introducing the electrically conducting material into the second set of channels includes inserting wires one of containing and made of electrically conducting material.

21. The method according to claim 9, wherein introducing the electrically conducting material into the second set of channels includes one of chemical and galvanic metallization of insides of the second set of channels.

22. The method according to claim 9, wherein the electrically conducting material includes one of an electrically conducting ceramic and a metal.

23. The method according to claim 22, wherein the metal includes silver.